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See EMC-0440

Re: Draft Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic EIS (PEIS) and the Draft Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Report (PER)

Dear Mr. Amme:

The Nature Conservancy (TNC) would like to thank the Bureau of Land Management (BLM) for the opportunity to provide comments on the draft Programmatic Environmental Impact Statement (PEIS) for Vegetation Treatments using Herbicides and the Draft Programmatic Environmental Report (PER) for Vegetation Treatments on BLM-managed public land in 17 western states.

The Nature Conservancy is dedicated to preserving the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters these species and communities need to survive. The Conservancy has nearly one million members and programs in all 50 states and in 27 other countries. To date, our organization has protected more than 14.5 million acres in the United States and more than 101 million acres in other countries with local partner organizations. The Conservancy manages more than 1,400 private preserves in the United States – the largest private system of nature sanctuaries in the world. Our conservation work is grounded in sound science, strong partnerships with other private and public landowners, and tangible results at local places.

The Conservancy recognizes invasive species and altered fire regimes as two of the most critical threats to the conservation of biological diversity. Our Global Invasive Species Initiative was created to help our organization and our conservation partners address invasive species using a complimentary suite of approaches, including scientific research and analysis, land and water management, and public policies. This Initiative's two main goals are: (a) to prevent new harmful invasions; and (b) to build the capacity of Conservancy programs and partners across all 50 states and around the world by providing information, guidance and training to assess, prevent, quickly detect and control weeds and other invasive species and to restore invaded sites.

The Conservancy's Global Fire Initiative works with a variety of entities, including the BLM, other public agencies, private organizations, and individuals to collaboratively overcome fire-related challenges. The Conservancy promotes safe and cost-effective approaches that engage all stakeholders across whole landscapes through integrated and effective fire management approaches that include: (a) shifting from a strategy that focuses predominantly on fire suppression to an approach that restores historical fire regimes through appropriate management responses; (b) promoting wildland fire use and prescribed fire where appropriate; (c) reducing hazardous fuels based on good science and long-term ecological restoration goals; and (d) rebuilding native ecosystems.

General Comments

The Nature Conservancy agrees that land managers need to think comprehensively about the restoration of native plant communities and natural fire regimes across the western landscape. We understand the need for fuels treatment, fire regime restoration, invasive species prevention and control, and native ecosystem (land health) restoration on western public land, but we believe that these activities must be supported by specific ecological goals designed at large landscape scales, restoration objectives appropriate for specific plant community types and conditions, and treatment methods that will not cause unintended consequences to non-target species.

We are concerned that the proposed major expansion of vegetation treatments on public land by the BLM discussed in the Draft PEIS and PER is not supported by identified ecological goals for each ecoregion, restoration objectives for individual plant communities, adequate mandatory guidelines for selecting and applying appropriate treatment methods, and appropriate monitoring strategies at multiple scales that will measure both accomplishment in meeting restoration objectives as well as effects to other resources. We will discuss these concerns in more detail for each document in the sections below.

1. Analysis scale: The Draft PEIS and PER propose an increase in vegetation management treatments on public land to 6 million acres per year, yet there is no map or description of where these treatment acres might occur other than a large scale map of assumed Fire Risk Regime Condition Classes (FRCC) across the entire West and a statement that over half of these treatments would occur in the Temperate Desert Ecoregion. The two documents defer to local land use plans for specific management areas, treatments and mitigation, yet many of BLM's land use plans are more than 15-20 years old and do not include updated information on fire regime condition class, ecological condition of vegetation to be treated, location of sensitive plant and animal species, or current goals for restoration of native plant communities.

2. Restoration objectives: Although the Draft PEIS and PER state that 50 percent of the acres planned for treatment will be treated to restore historic fire regimes, these documents do not address specific goals for restoration of historic fire regime or land health condition by ecoregion or plant community type. The PER should distinguish between hazardous fuels treatments, restoration of historic fire regimes, and restoration of

plant community health – they are not synonymous and may require different treatment methods to achieve. The assumption made in the PEIS that, "Treatments that remove hazardous fuels from public lands would be expected to benefit the health of plant communities..." does not apply to all or even most circumstances since the health of plant communities depends on many variables, including plant species composition, the amount of existing alteration from the native plant community, and what species and amount of fuels are removed in a given area. We are particularly concerned that the PEIS and PER focus largely on goals for what vegetation, both weeds and fuel, is to be reduced or eliminated. The PEIS and PER and the majority of BLM's older land use plans include few specific descriptions of ecological goals for the desired future condition of the plant community composition and vegetation structure that proposed fuels treatment and other vegetation management projects are designed to achieve. The PEIS and PER should reference and utilize the many recovery and conservation plans that apply to Federally listed and rare species found on public land for restoration goals needed to assist in species recovery. In some cases, restoration of historic fire regimes, without other significant habitat restoration, may lead to additional decline of species of concern.

3. Regional coordination/integration of vegetation management practices: For vegetation management of this magnitude (24 percent of all BLM-managed public land would be treated in the first decade) coordination of treatment goals, priorities and areas to be protected should occur above the project and field office levels. Due to the scale of treatments in some areas (over 50 percent of all fuels reduction projects would occur in one ecoregion) specific regional strategies that include additional multi-agency regional analysis, priority setting among adjacent landowners, and management guidelines is needed to ensure projects are designed to restore ecological function rather than contribute to the continued decline of certain community types, particularly sagebrush and other shrub communities. The BLM's Great Basin Restoration Initiative makes a good start in describing general treatment needs for public land within the Great Basin, but the treatment goals need to be more specific for particular plant communities and ecological condition, better integrated with sagebrush management guidelines, consistent with regional sage-grouse and other special status species restoration strategies, and prioritized with other agencies conservation and restoration strategies to be effective.

4. Standard Operating Procedures (SOP's) and Guidelines: The Standard Operating Procedures (SOP's) and Guidelines described in both the Draft PEIS and PER should include additional requirements for wildlife species that are not Federally listed. The SOP's and Guidelines should be mandatory rather than optional ("must" rather than "where possible") to be effective. The PEIS and PER assume that these SOP's and Guidelines are adequate to protect public resources, however, information in the reports appears to contradict this assumption. As an example, there are no specific SOP's to mitigate the impacts of proposed fire or mechanical treatments in sagebrush communities to protect habitat for declining sage grouse populations, although the BLM has developed such guidelines (Guidance for the Management of Sagebrush Communities for Sage-grouse Conservation, November 2004). Although both documents cite the likely negative impacts caused by livestock grazing immediately after certain vegetation treatments, the SOP for livestock use following treatments only requires the BLM to

"Provide alternative forage sites for livestock, if possible." In our experience, a minimum of two years of complete rest, preferably three or more, following prescribed fire treatments is needed to allow for native plant restoration. We believe this guidance should be strengthened.

5. Monitoring results and effects at regional scales: The draft PEIS and PER do not provide adequate direction on the need to monitor ecological conditions, treatment implementation and management effectiveness relative to project goals, or describe the tools available to do so. LANDFIRE is a wildland fire, ecosystem, and fuel assessment-mapping project designed to generate consistent, comprehensive, multi-scale maps of vegetation, fire, and fuel characteristics for the United States. Tools such as LANDFIRE will be especially useful not only for analyzing and documenting hazardous fuels conditions, identifying ecosystems at risk, conserving ecosystem function, and implementing Fire Program Analysis, but it also provides a framework and data for monitoring the success of treatments over time, including changes in Fire Regime Condition Class (FRCC). We recommend that the public investment and value of LANDFIRE be utilized to the greatest extent possible.

6. Altered landscapes: The PEIS and PER need to acknowledge that there are significant areas on public land that are so highly altered that they are not economically or practically recoverable. For example, in areas of significant downy brome (*Bromus tectorum)* infestation, inappropriate (prescribed fire) or insufficient (plowing or tilling without appropriate native plant restoration techniques) actions in these areas may cause increases in downy brome infestation and fire frequency. Guidance needs to be provided for areas where specific treatments are not appropriate in specific ecosystems, for example, restricting the use of prescribed fire in sagebrush plant communities below elevation gradients where downy brome is most likely to invade.

7. Coordination with other agencies: We believe that the PEIS and PER should put greater emphasis on coordination with other Federal and State agencies on vegetation management treatments and new herbicide proposals to meet the stated intent of building collaborative relationships. The BLM coordinates with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service on potential impacts to Federally-listed, proposed and candidate species. The BLM should also initiate coordination with USFWS on conserving migratory Birds of Conservation Concern, both at the project level and for new herbicide proposals. Department of the Interior and BLM policy requires annual coordination with state wildlife agencies on management proposals. To be most successful, this coordination should be designed to pro-actively meet conservation and recovery goals for all species of concern rather than merely avoiding "jeopardy" or minimizing adverse effects to these species. The PEIS and PER should require early and pro-active coordination with all agencies involved in the management of fish, wildlife and rare plant resources.

Draft PEIS

1. General PEIS Comments: The Nature Conservancy supports efforts by the BLM to treat noxious weeds and non-native invasive plants that negatively impact biodiversity, natural communities, rare and endangered species, plant communities and habitats, and ecosystem processes. We support the proposal in the Preferred Alternative to treat increased acreage of BLM-managed public land, but emphasize the need to utilize best management practices, integrated pest management (IPM) techniques, and safe and responsible use of herbicides within the context of written weed management plans.

We also support the use of aerial applications of herbicide on extremely large or inaccessible weed infestations where the only way to viably treat these areas would be via aircraft. The PEIS should require that each aerial application proposal include a detailed spray prescription, specifying riparian buffer zones, sites of rare and endangered species and communities, goal and objectives of application, protocols to minimize drift and avoid off-target damage, and suitable monitoring protocols that will elucidate effectiveness of treatment as well as negative impacts to off-target resources. In cases of herbicide use post-wildfire, we recommend that the BLM first determine the actual need of herbicide application (based upon pre-wildfire inventory of the range and extent of weeds in the area) prior to any aerial application to suppress weeds following a wildfire, and to allow for natural re-vegetation of native species, wherever possible.

The Draft PEIS should provide additional guidance, direction, and emphasis on prevention and early detection of weed outbreaks, rapid response to detected outbreaks, and integrated pest management that would minimize the need for future control efforts. The main focus of the PEIS appears to be on treatment of already infested areas. The Draft PEIS is mostly silent on prioritization of treatment areas, recommendations of which method(s) to use under different circumstances, or how to prioritize weed species, treatments and sites of high value. The PEIS should provide guidance on how to select among different weed control methods and combinations of methods, how to determine when certain treatments are allowable, and under which conditions certain treatment options (and certain herbicides) may not be used or only used as a last resort.

Chemical herbicides are important tools for the management and control of non-native invasive plants when used responsibly. To be most effective in controlling non-native invasive plants on public land, the PEIS should:

- Require and recommend specific standards and practices to prevent new invasions and the spread of weeds;
- Develop early detection and rapid response practices;
- Require that all vegetation control treatments occur within the context of a management plan with clear goals and objectives, and desired future conditions;
- Have clear guidelines for prioritization and integrated pest management methods for weed management; and

- Require adequate monitoring to ensure effective control, proper treatment selection, and minimal environmental and health impacts to ensure that off-target impacts are not beyond those predicted and deemed acceptable.

For situations in which herbicides are to be used, the PEIS should describe how to select among different herbicides and selection methods. Herbicides recommended for use should be selective for the target weed(s) and known to be effective for control of those species; have relatively low persistence in soils and the environment; have low potential for off-site movement; and minimize potential harmful impacts to off-target organisms and human health (including that of the applicators).

2. Purpose and Need: The Draft PEIS lists certain herbicides that would be allowed for vegetation management, without adequately describing their appropriate uses. The PEIS should list species (where known) and types of plants (including categories for new invaders) that will be controlled and the rationales for controlling each. The Draft PEIS needs to more clearly identify management goals and associated treatments in order to assess which are suitable for public land and to assess the potential impacts of each to native plant communities and their associated wildlife. In some cases, the BLM appears to be controlling native species to artificially increase allowable uses rather than to protect land health. For example, the Draft PEIS discusses situations where native species such as oaks, sagebrush, and rabbitbrush, are being controlled primarily to produce additional forage for livestock on native shrublands and grasslands, rather than to improve ecosystem health. We believe that controlling vegetation to artificially alter rather than restore native ecosystems is not appropriate on BLM-managed public lands. Artificially creating areas for livestock grazing that are not consistent with native plant communities will not restore healthy ecosystems or natural fuel regimes, will not protect ecological values, and will require additional, expensive treatments to maintain.

The Draft PEIS suggests that there are situations where the BLM allows the use of herbicides for complete vegetation control on public land – not to manage for natural resources, but to maintain open lots and industrial-type sites. For example, the herbicide bromacil, one of the herbicides listed in the Draft PEIS, is labeled for use to control undesirable vegetation for extended periods of time in areas such as railroads, highway and pipeline rights-of-way, petroleum tank farms, lumberyards, storage areas and industrial plant sites. These treatment methods would be more appropriately discussed under a separate category for "facility maintenance" rather than as generally accepted management methods under "vegetation treatment".

3. Citizens Alternative: We agree with this alternative's emphasis on requiring prevention, early detection/rapid response, and restoration following treatment. We do not agree with this alternative's proposed ban on the use of acetolactate synthase-inhibiting (ALS-inhibiting) herbicides (chlorsulfuron, imazapic, imazapyr, metsulfuron methyl, and sulfometuron methyl). These herbicides should be used sparingly, and with caution, particularly sulfometuron methyl, which has already been the subject of public controversy in Idaho. ALS-inhibiting herbicides should only be used in situations when no other herbicides would be as effective. As one example, imazapyr has been shown to

be more effective for the control of cordgrass species (*Spartina* spp.) than any other herbicides and has little off-target impacts.

Some ALS-inhibiting herbicides have higher potential for off-site movement than other effective herbicides. The PEIS should provide guidance on how to weigh the benefits of increased effectiveness against the increased risk of off-site movement that certain ALS herbicides could pose. We believe that use of ALS-inhibiting chemicals should be allowed, but only in justifiable circumstances and within the context of an adaptive management plan.

4. Specific comments about herbicides: Some of the background information used in the Draft EIS on the environmental fates of the herbicides imazapic, 2,4-D, glyphosate, imazapyr, triclopyr, clopyralid, hexazinone, picloram and fosamine ammonium is cited from the Conservancy's Weed Methods Control Handbook (PEIS pages 4-8, 15, 16, 17, 18, 19, 27, 28, 29, 30, 31, 32, 39, 46). While we appreciate the reference to our work, this Conservancy handbook is not a report of original research and study results, but is instead a compilation and review of available scientific literature. Therefore, we strongly recommend that BLM PEIS' authors find and cite from those original scientific sources instead of referencing our handbook.

The Draft PEIS lacks up-to-date information and citations from the scientific literature on potential and appropriate uses of various herbicides. The PEIS lacks rationale for including some herbicides on the recommended "approved for use" list in the Preferred Alternative, other than the fact that the BLM is already using these chemicals and wants to continue to do so. We suggest including a section in the PEIS that justifies the use of each herbicide by describing under what conditions specific herbicides will be used, for what purposes, and why that specific herbicide is appropriate and recommended over others. There are several herbicides on the Preferred Alternative list that could be replaced by more modern herbicides with less environmental impact, less persistence in soil, and with similar control results.

We recommend removing four herbicides listed in the Preferred Alternative from the approved list: bromacil, dicamba, diflufenzopyr + dicamba (Overdrive), and diuron. We also recommend that the BLM consider removing tebuthiuron from the list or including recommendations to reduce its use. The reasoning for our recommendations is discussed below for each herbicide:

a. Bromacil: Bromacil is a pre-emergent herbicide frequently used to keep all vegetation clear along fencerows, parking lots, railroads, etc. It is often used by the oil and gas industry to kill all vegetation on the pads around drilling sites and platforms. This herbicide has a relatively long residence time/half-life, a high potential for water contamination, and a high potential for lateral movement. It is not clear why the BLM needs to use this herbicide for general vegetation management treatments, since there are few uses for it in a natural landscape. If this herbicide is needed for facilities maintenance, a clear statement restricting it to such uses should be included. It can be used effectively, but this herbicide can cause severe damage if

used incorrectly due to its long persistence and ability to leach through soil and contaminate groundwater. If this herbicide remains on the BLM's list, there should be a strict process developed for its application in limited circumstances that includes a determination of risks, prior to use.

b. Dicamba: This herbicide has been marketed in the U.S. for decades and has been widely used in the past, mostly for management of grazing pastures. It is inexpensive, but has a slightly longer residence time/half life than 2,4-D. Since the BLM does not anticipate using very much of it (Table 2-4) and there are suitable alternatives with fewer environmental effects, we question the need to keep it on the Preferred Alternative list.

c. Diflufenzopyr: (in formulation with dicamba to form Overdrive) – Diflufenzopyr is not a new herbicide. It has been used in the past mainly for weed control in soy and corn crops. A new label now allows its use in non-crop areas. Under the Preferred Alternative, BLM projects its use on only two percent of all acres treated. There is no justification given in the PEIS for the use of this herbicide other than a mention of Overdrive being effective on oak and several other species, with no reference cited (PEIS 4-63). We question the need to include this herbicide, since equivalent control can be achieved with other herbicides on the Preferred Alternative list. There is one published paper (Lym and Deibert 2005) that discusses the effectiveness of diflufenzopyr+dicamba in non-crop areas on *Cirsium arvense* (Canada thistle) and *Euphorbia esula* (leafy spurge), but this treatment was not more effective than other available herbicides after one year of treatment. Since no other documented studies on the use of this herbicide in non-crop areas are cited, we recommend removing this formulation from the BLM-approved use list.

d. Diuron: This herbicide has been marketed in the U.S. for decades and has been used mostly in agricultural situations in the past. It is still used on some croplands, but is typically not used in non-crop (natural/wildland) areas. Diuron is moderately to highly persistent in soils, its mobility depends on soil type, and it has been found in groundwater sources in California. Given that the Preferred Alternative projects use of this herbicide at less than one percent of all treatments, we question the need to include it. There are other herbicides that can provide the same or better level of weed control than diuron with fewer environmental effects.

e. **Tebuthiuron**: Tebuthiuron is currently widely used by the BLM. According to the PEIS, it was used to treat 34.5 percent of all BLM-managed public land acres treated using herbicides from 1999-2003. The Preferred Alternative proposes that it will be used in the future on 25 percent of all herbicide-treated acres. Tebuthiuron is generally used for control of shrubs and trees as well as weeds, since it eliminates all vegetation from the treatment area. It is often applied at a pre-emergent stage for the long-term control of shrubs such as sagebrush, rabbitbrush, and other native shrub species. It provides long-lasting, non-selective control, and can be used in upland/dry areas away from any water resources. We understand that the BLM uses this herbicide to thin or eliminate woody plants in order to increase grass production for

livestock grazing, for non-selective control of all vegetation in oil and gas production areas, and in-concert with chaining to remove sagebrush and juniper. We are concerned with the possible widespread use of this chemical in native grass and shrubland areas, since its non-selective nature has the potential of significantly altering native species composition and inhibiting restoration of a full complement of native species. We do not believe that this chemical will assist the BLM in meeting its goal of improving land health. We recommend that the uses and restrictions for use of tebuthiuron on public land be specifically detailed in the PEIS.

4. Mitigation/Monitoring: On page 2-21 of the PEIS, monitoring for treatment effectiveness is mentioned. However, the only specific requirement listed is for water resources and there is no requirement to monitor impacts to non-target species or habitats. We strongly urge that the PEIS include guidelines and requirements for monitoring to assess potential off-target impacts as well as to assess treatment effectiveness.

Tools such as LANDFIRE (http://www.landfire.gov) can be especially useful not only for analyzing and documenting hazardous fuels conditions, identifying ecosystems at risk, conserving ecosystem function, and implementing Fire Program Analysis, but in providing a framework and data for monitoring the success of treatments over time, including changes in Fire Regime Condition Class (FRCC). Per our previous comments, we recommend that the BLM utilize LANDFIRE to the greatest degree possible.

5. Protocol for Identifying, Evaluating, and using new Herbicides (Appendix D): This protocol should include a requirement for coordination with other resource specialists, including wildlife and fisheries biologists, botanists, and hydrologists, and for consultation with agencies, including U.S. Fish and Wildlife Service and National Marine Fisheries Service on potential effects of new herbicide use on public land to Federally listed and candidate species and migratory birds of conservation concern and with State wildlife agencies on potential effects to state-listed and other special status species.

Draft PER

1. General PER Comments: Once approved, the PER can be incorporated by reference in the planning, justification, and review of local level projects. In order for it to be useful to assist local planning, the PER needs additional detail in several areas, including restoration goals, monitoring at multiple scales, the need for pre- and post treatment noxious weed and invasive species control, and guidelines for the use and limitations of livestock grazing to control weeds. Additional general comments include:

- The current document does not clearly indicate where the majority of the acreage treatments are intended over the next decade. It would assist reviewers in analyzing potential effects to identify the acreage projected by individual field office and state level programs and the location of the additional 1.4 million acres of proposed treatment areas added by the national fire team based on fire regime condition class.

- The PER should describe positive vegetative objectives by plant community and ecosystem as well as what plant species and fuel loads projects are trying to remove. The PER should state what plant community and structure the BLM is trying to achieve by their proposed vegetation treatments in specific plant communities and ecosystems.

- In order to truly build collaborative relationships, partners need to be directly engaged early in the process of establishing specific restoration goals and management priorities at the local, regional and national levels.

- The PER should discuss barriers to success of the strategy to the extent necessary to ensure they don't restrict successful implementation of the goals. For example, the PER should discuss where air quality regulations might restrict the use of prescribed fire or where the lack of fire capacity might limit BLM's ability to implement restoration opportunities and how these limitations will be addressed.

2. Purpose and Need: The Draft PER states that the purpose of the BLM's proposed increase in vegetation management treatments is to: "...reduce the risk of wildfire by reducing the occurrence of hazardous fuels...restoring fire-adapted ecosystems, and repairing lands damaged by fire" (PER 2-1). Yet the remainder of the document focuses almost exclusively on hazardous fuels reduction. There is insufficient discussion of methods and priorities for the restoration of fire-adapted ecosystems, even though the stated goal for 50 percent of acres to be treated will be to restore historic fire regimes. There is also insufficient discussion of the need, opportunity, and proposed treatments to maintain intact areas that are already in Condition Class I to prevent degradation to higher condition classes.

Hazardous fuels treatments and restoration of historic fire regimes are not necessarily compatible actions and the PER should clearly distinguish this fact. Meeting the goals for one does not automatically meet the goals for the other. Vegetation management can include a wide spectrum of activities. Some, but not all, vegetation management actions will reduce fuels and have beneficial restoration impacts. Some will be focused only on hazard fuel reduction, while others will focus solely on ecosystem restoration. The PER should address the full spectrum of actions and impacts of each action. For example, the PER should describe how the BLM would prioritize treatments if the characteristic fire regime consists of stand-replacing fire, rather than assuming that all fire regimes are similar. The BLM should also address how ecologically-based criteria will be integrated into BLM's decision-making on fuels treatment, fire regime restoration and other treatment goals in order to achieve their stated objective of land health restoration (PER pp. 3-21-42).

In much of the Intermountain West where downy brome (*Bromus tectorum*) has invaded, fire frequency has been greatly increased, leading to the destruction of native plant and animal communities and the perpetuation of downy brome domination. Projects to restore healthy native plant communities as well as to restore historic fire regimes are needed in these areas in addition to or instead of fuels treatment projects. Only one paragraph (PER

2-3) discusses the BLM's native plant initiative, which has a goal of increasing native seed production for restoration use on 500,000 acres per year. The amount of seed production projected appears to be inadequate to meet the needs of fire rehabilitation (which treats 1.5 million acres per year), resource management needs (1.0 million acres per year) and restoration of historic fire regimes in altered landscapes (over 1.0 million acres per year). The PER should integrate the goals and funding of this program with both the fuels reduction and the burned area rehabilitation programs in these documents.

3. Definition of Hazardous Fuels: In the Draft PEIS and throughout the PER there is frequent reference to hazardous fuels, but there does not appear to be a clear description of what these entail. According to the Draft PER definition, hazardous fuels can be interpreted as any vegetation that may burn when someone does not want it to burn. It is not clear who will determine what are hazardous fuels in a given project area and what is natural plant community structure. A more precise definition would assist in understanding proposed treatments and providing guidance to project design.

4. Ecological Justification and Intent of Fuels Treatments: General descriptions of fire regimes (PER 3-22 through 3-42) do not describe historically fire-independent types, like many desert plant communities, where fire frequencies have increased due to species invasions and altered ignition patterns as a result of human development. These fire-independent regimes are addressed in detailed descriptions of fire regimes in the desert ecoregions and how they've been altered, but the general descriptions and purpose and need sections of the PER seem to imply that all western ecosystems are fire-adapted in some way.

The PER should include ecologically-based goals for restoration that quantify desired outcomes. The PER should describe how the BLM intends to measure goals to "sustain the condition of healthy lands, and, where land conditions have degraded, to restore desirable vegetation to more health conditions" (PER 4-32). These goals, objectives, priorities and strategies should be based on the best available science for the specific plant communities scheduled for treatment not on general concepts of fire risk and fuels treatment drawn from other habitat types.

The Draft PER states that, "Biodiversity can be increased by fire and reduced by eliminating fire…" (PER 3-21). While that may be true in certain circumstances, the converse can also be true in ecosystems that are not fire-adapted or in fire-dependent ecosystems with too frequent (e.g. systems invaded and dominated by downy brome, *Bromus tectorum*, and red brome, *Bromus rubens*) or too severe fires (systems in the southeastern U.S. invaded and dominated by cogongrass, *Imperata spp.*). We question the basis for the implication that biodiversity has a direct relationship to variation in fire frequency and seasonality throughout the West.

The references provided on biodiversity mostly discuss the effects of fire on forested ecosystems, a small proportion of BLM-managed public land. Fred Sampson in *Prairie Conservation* (1996) concludes that the forces affecting biodiversity are complex and include forces operating at multiple temporal and spatial scales including topography,

climate, competition, drought, and herbivory, as well as fire. Much of the description of vegetation communities and related fire processes also focuses on forest communities (including eastern species such as longleaf pine, shortleaf pine, red pine, Eastern red cedar, jack pine, and red maple) rather than describing plant communities most commonly found on western BLM public land: woodlands, perennial and deciduous shrublands and perennial grassland and desert ecosystems. We recommend including additional material on fire history and the effects of fire on sagebrush and saltbush shrublands, juniper woodlands, perennial grasslands and other plant communities proposed for treatment in order to better display potential effects of treating these habitats.

The PER provides no evidence that high frequency/low severity fire regimes produce more diversity in all habitat types, particularly those managed by the BLM, than low frequency/high severity regimes. Biodiversity in a given area is dependent on more than fire regime. Heavy grazing following a fire can counteract any benefits to a plant community gained by burning. The focus of fire management should be on maintaining and restoring native fire dynamics, *whatever* they are (PER 3-22) rather than on maintaining the same type of regime (high frequency/low severity) for all habitats. Fire is presented as a factor that "alters" successional pathways (PER 3-22). However, in fire-dependent and fire-influenced systems, natural fire dynamics are a part of the natural successional process (through evolution of fire-adapted species) and should not be considered apart from it.

The need for increased fuels treatment is based substantially upon the Forest Service's 2000 FRCC assessment (PER 1-6). The current FRCC is less accurate in shrub and grass community types, which make up the majority of BLM-managed habitats and was not designed to identify project-level work. Field offices, in coordination with adjacent landowners, should be required to complete additional FRCC assessments based on current vegetation mapping before planning projects to transition FRCC 3 areas to FRCC 1. The PER should include the process that the BLM will use to update its estimates of treatment needs based on newer FRCC mapping that is currently underway (LANDFIRE mapping project). We believe that the coarse scale FRCC data currently under development as part of LANDFIRE should be considered one key criterion for assessing current fire regime conditions and determining larger-scale treatment priorities.

5. Vegetation Method Treatment Selection: This PER section (PER 2-8) describes general parameters that may be considered in selecting a treatment method but does not include any requirements or guidelines to be used by field offices. Vegetation methods should be based upon ecologically-based goals for restoration that include desired outcomes for the specific plant communities scheduled for treatment not on general concepts of fire risk and reduction of fuel loads that have been drawn from other habitat types. Vegetation treatments should use the best available science in prioritization and planning (PER Chapter 2). LANDFIRE will provide quantitative reference conditions that synthesize the best available science on fire and vegetation dynamics for all potential vegetation types across the U.S. and can be used to help set goals and assess alternative strategies for achieving goals.

6. Temperate Desert Ecoregion: The PER states that 70 percent of Fire Regime Condition Class 3 occurs in Temperate Desert Ecoregion, that over half of fuels reduction projects will occur there, and that the treatments that will be most frequently used are prescribed fire and mechanical treatments (chaining, plowing, disking, etc.). Information in the report does not appear to support the need for treatment or these methods of treatment. Many of these communities have been invaded by invasive species that have made them highly susceptible to wildfire and increased the fire frequency in many areas. For example, in large areas of the Temperate Desert Ecoregion downy brome (*Bromus tectorum)* invasion has led to, or threatens to lead to, sharply increased fire frequencies and subsequent devastation of native plant and animal communities. Sagebrush communities, the perennial shrub plant community that makes up 75 percent of this ecoregion, has a fire return frequency of 50-100 years (PER 4-34). Sagebrush is typically killed during a burn and most species require 30-50 years to return to dominance on the site. The PER states that fires at intervals of less than 30-50 year cycles would adversely affect native communities and that on sites with invasive annual grasses, such as downy brome, prescribed fire would likewise negatively affect sagebrush communities. It is not clear how additional prescribed fire will benefit these community types, since downy brome and other invasive species that provide the hazardous fuels in these communities will increase with increased fire and native species such as sagebrush will be killed.

Mechanical treatments without a substantial investment in reseeding with native species, including native shrubs, will likewise not benefit these communities. The PER states that while mechanical treatments may increase grass production in the short term, they would have adverse effects to native shrublands over the long term (PER 4-45). The PER should more explicitly analyze and display the trade-offs being made between short-term benefits and long-term harm to these ecosystems and the many species that depend upon these shrublands. The level of investment in native seed production appears to be inadequate to support the needs of these proposed vegetation treatments as well as the Burned Area Emergency Rehabilitation program.

Two references to fire return intervals for the pinyon-juniper community appear to contradict each other, one stating that the return interval is 100-200 years and another (from 1924) stating 10-30 years. Those two figures are not reconciled but cause quite different results when looking at departure intervals for this plant community. The PER states that, "In pinyon-juniper communities that have been altered by past land use, burning could negatively affect native plant species" (PER 4-36) while pointing out in Chapter 3 that most of these communities have been altered by past land use. The issues that were raised under item #4 above regarding reference conditions and interactions between fire and local vegetation also apply to this issue. More specific consideration of the interaction of fire with native shrubs and downy brome should be included, including an analysis of potential undesirable effects and guidelines for appropriate fire use in different shrub/invasive plant situations.

7. Use of prescribed fire: The Draft PER calls for substantial increases in the amount of vegetation that will be treated with both prescribed and wildland fire, up to 2.1 million

acres each year. The Nature Conservancy strongly supports the use of fire as a management tool, where appropriate, as it is an important and natural ecological factor in many vegetation types and ecoregions. The Draft PER calls for increases in the use of fire "primarily for historic fire regimes and to control wildfires in the WUI" (p. 1-6), however it targets 63 percent of fire treatments in the Temperate Desert Ecoregion, with nearly half (48 percent) in evergreen shrublands. Chapter 3 of the PER discusses the historic increase of fire frequency and severity in these same shrublands. It is not clear that the appropriate plant community is being targeted for these treatments.

Restoration of fire-adapted ecosystems on public land should also be a primary objective of any proposed increase in the use of prescribed fire. More clearly articulating this goal in the PER will assist local field offices in designing appropriate projects. Maintenance of landscapes in Fire Regime Condition Class 1 should also be identified as a high priority in the fire use section. It is not currently identified as an objective. In addition, there is a specific need for both pre- and post- fire monitoring of invasive species to determine the need for herbicide use or other control methods in both burned area rehabilitation projects and prescribed fire treatment areas.

The Conservancy supports an increase in the use of wildland fire use as an appropriate management approach in remote Alaska. We also believe that there are areas in the lower 48 states where wildland fire can safely and effectively be utilized to meet restoration objectives, particularly in coordination with partner land management agencies. We encourage the BLM to include guidance on the appropriate use of wildland fire to meet restoration objectives to field units through this PER.

8. Fuels treatments: BLM field offices developed acreage estimates of 4.6 million acres of treatments per year based on existing land use and fire plans. An additional 1.4 million acres of treatment needs were based on existing FRCC assessments and the stated goal of shifting FRCC 3 conditions to FRCC 1. Without maps of all proposed treatment areas it is not possible to determine whether there is overlap in these estimates or whether these acres address large-scale needs and priorities for maintenance of areas in existing FRCC 1. There is insufficient information on how the additional 1.4 million acres of treatment were determined by national staff. Additional information should be provided on the location and extent of all proposed treatment areas, their management objectives, and proposed methods of treatment in order to be able to assess potential cumulative effects from multiple treatments in adjacent areas or similar ecosystems.

All of the tools identified for vegetative treatments (fire, mechanical, etc.) may be needed and appropriate in varying degrees. However, the restoration outcomes relative to each tool are poorly defined. This section of the PER should include additional detail on specific objectives for the use of each vegetative treatment type in order for this material to be useful when incorporated by reference at some later date into local project reviews.

9. Mechanical treatments: The BLM is proposing to treat 2.2 million acres of public land each year using mechanical treatments including tilling, plowing, chaining, drilling, seeding and other means. Eighty percent of all mechanical treatments will occur in the

Temperate Desert Ecoregion; forty-one percent in evergreen shrubland with the target being woody species such as sagebrush (PER 4-43). The rationale for these treatments is not clear unless it is to temporarily increase forage production. These shrublands have historically been adversely affected by previous mechanical treatments, invasion of noxious species and increased fire frequency. The PER concludes that these treatments could have adverse effects to native evergreen shrublands over the long term (PER 4-45). Additional analysis and discussion of the trade-offs being made between short-term benefits and long-term negative effects on this ecosystem and the species it supports should be presented, since there appears to be a high likelihood that special status species, such as sage grouse could be affected by targeting treatments toward sagebrush in this ecoregion.

10. Livestock grazing: Biological control as described in the PER includes the use of livestock for the control of unwanted vegetation. We do not believe that it is appropriate to categorize livestock grazing as a "biocontrol" option (PER 2-12), although it may be appropriate to discuss it as a possible "cultural control" technique. "Classical" biocontrol targets a non-native pest species with one or more (non-native) species of host-specific biocontrol agents from the pest species native range. Livestock grazing does not fit this definition, since these vertebrate grazers are not host-specific, feeding instead on many species, rather than just one or a few. Livestock species are not native to the same regions as many of the weed and invasive plant species they might be used to control. While goats have been used successfully in some parts of Colorado to control weeds, the areas treated had extremely high levels of weed infestation and the goats were controlled by a herder who ensured that they grazed only in designated local areas, for relatively short periods and at high grazing intensities. As the PER points out, without proper management controls and significant herding effort, livestock grazing can result in the increase of unpalatable, non-native species at the expense of native species or other desirable forage species.

The PER provides only general discussion of what management controls are needed to ensure positive benefits from livestock grazing used to control weeds. The discussion of the benefits of livestock grazing to wildlife habitat is too brief and simplistic to be either useful or accurate. While livestock grazing, in some situations, may benefit certain, shrub-browsing species (e.g. deer), it can have an equal negative benefit on species needing forbs and grasses under those shrubs for food and shelter (e.g. sage grouse). There are no standard operating procedures or guidelines offered to protect wildlife species or habitats from excessive livestock use (PER 2-26). While we recognize that livestock grazing can be used as a tool for weed control in some specific, controlled situations, it is misleading to include it as part of the general biocontrol discussion. We recommend that livestock grazing be discussed in its own management section for cultural practices with a careful discussion of appropriate situations for its use as a weed control measure, and specific parameters and guidelines for its control in weed management practice. Included should be a discussion of the potential negative impacts to native plant species and wildlife and fish habitat from excessive or improper livestock grazing use.

11. Biological control agents: The only requirement in the Draft PER for the use of biocontrol agents (insects, mites, pathogens) is that the agents be approved by USDA-APHIS. We recommend that the BLM utilize a more rigorous approval process with stronger guidelines for release of biocontrol agents on public land. Before releasing a biocontrol agent, the BLM should be able to demonstrate that the proposed agent is effective on the target weeds, that the agent is documented to have limited impact on off-target species, and that there exists a plan for long-term monitoring of impacts on the targeted weed(s) and on desirable species. There are dozens of biocontrol agents available for release for the control of certain knapweeds and Canada thistle, for example, but none that have been documented to actually contain or reduce populations of these weeds. Post-release monitoring of biocontrol should not only measure the survival of biocontrol agents, but also their effectiveness on target weeds and off-target impacts.

12. SOP Table 2-4:

a. Treatment Method Mechanical - No reference is made to the potential for invasive species encroachment post-disturbance, or the need for monitoring regarding this encroachment. Given the high disturbance associated with chaining this monitoring should be included as an SOP (PER 2-24)
b. Treatment Method Biological Controls – The use of livestock as a "cultural" practice should be evaluated separately and comprehensively from other targeted biocontrol agents. As described the use of livestock grazing does not appear to be targeted or controlled through herding and could likely result in overgrazing of native species (PER 2-21). Additional SOPs are needed to provide guidelines on where livestock grazing in specific plant communities (e.g. sagebrush) would adversely affect wildlife species (e.g. sage-grouse). True biocontrols should have additional SOP's to protect closely related native vegetation, non-native plant communities utilized by Special Status animal species, etc.
c. Resource Element Vegetation – SOPs and Guidelines for vegetation should be presented by plant community and ecoregion specific for each treatment type and should follow guidelines developed through other BLM strategies, including conservation and recovery plans, such as the BLM's National Sage-Grouse Straegy. For example no additional fire should be allowed in sagebrush communities invaded by or likely to be invaded by downy brome, however, higher intensity fire may be appropriate for other plant communities where low frequency/high intensity fire was the historic pattern.
d. Resource Element Wildlife – Additional SOPs and Guidelines should be provided for all treatment methods based upon BLM guidance for sagebrush and other shrub and grass habitats, including:
    - Guidance for the Management of Sagebrush Plant Communities for Sage-grouse Conservation (BLM November 2004) mandatory guideline (1.4.1) from National Sage-grouse Strategy (BLM IM 2005-024)
    - Management Guidelines for Sagebrush (Artemesia) in Western United States (BLM 2002)
    - Guidance for Addressing Sagebrush Habitat Conservation in BLM Land Use Plans

e. Resource Element Threatened and Endangered Species – All special status species should be surveyed prior to designing any vegetation treatment. Treatments should be designed to conserve and restore habitats for special status species in addition to avoiding or minimizing adverse effects to these species. Additional guidance should be provided to plan projects that will conserve and restore habitats used by Birds of Conservation Concern (USFWS 2002).

13. Cumulative Effects: The cumulative effects section developed for both the PEIS and PER appears to underestimate the potential effects of treating 25 percent of BLM-managed public land over the next 10 years. Included should be a discussion of potential unintended consequences of using the wrong treatment method in areas that are already highly altered by past human uses and management practices, the potential cumulative effect of treating multiple areas within one ecoregion with different treatment methods, and the potential cumulative effects to fish, wildlife, native plant communities and water resources of the combined proposed treatments over the next decade.

The section describing cumulative effects on vegetation (PEIS 4-206-207) does not adequately indicate the potential effect of the large number of prescribed fire treatments in the Temperate Desert Ecoregion, particularly as it relates to fire and downy brome interaction. The potential does exist for significant negative ecological impacts and these are not clearly noted.

Page 4-198 of the PEIS indicates that fuels reduction and increased prescribed fire may ultimately result in less total emissions due to the effective reduction of wildfires by these treatments. This is a positive aspect of proactive fuels management often overlooked by regulators. Increased wildland fire use will likely result in more local emission and haze in Alaska, including impacts to wilderness viewsheds. While long term emission levels may stay near current levels (PEIS 4-199), the increased level of wildland fire use could result in significant short-term haze events such as those in the summer of 2004. These potential effects should be discussed in the cumulative effects section on air quality.

14. Mitigation/Monitoring: This PER will be incorporated by reference into local fuels treatment projects. Given the recent emphasis on multiple agency treatments and monitoring protocols, it would be appropriate to detail a common fuels treatment monitoring program that will apply at the landscape scale and include actions by multiple agencies and multiple treatment methods. The information contained on p. 2-32 of the PER briefly describes current monitoring practices but provides no guidelines to field offices in developing additional monitoring strategies need for the proposed increased scale of vegetation treatment practices. We believe that an adequate monitoring strategy would include a discussion of regional and plant community goals by ecoregion and a discussion of how to integrate monitoring at a landscape scale to include multiple types of vegetation management treatments conducted by multiple agencies.

Adaptive management is more than monitoring the effectiveness of site-level activities. There are no measures offered at the West-wide or ecoregion scale to determine if

programmatic goals are being reached. An adaptive management process should be in place to ensure large-scale goals are being reached, and to describe what will trigger a change in programmatic strategy (PER 2-32). As described in our general comments and comments specific to the PEIS, LANDFIRE data (http://www.landfire.gov) can be used to help design and populate an effective and efficient monitoring protocol.

The Nature Conservancy considers the BLM a key partner in protecting biodiversity and ecological values on public land. The Nature Conservancy's ecoregional assessments (ERA) have identified many sites on BLM-managed land that support high levels of biodiversity that warrant conservation for their ecological value. The Conservancy works closely with the BLM on assessment, protection, restoration and monitoring at many of these sites. We look forward to continuing this close working relationship with the BLM during the development of the final PEIS and PER. We welcome the opportunity to meet with BLM staff to discuss our comments in greater detail. Please contact myself; John Randall, Global Invasive Species Initiative Director (jrandall@tnc.org); or Ayn Shlisky, Global Fire Initiative Acting Director (ashlisky@tnc.org), if there is additional information that we can share or clarification that we can provide prior to the publication of the final EIS and final ER.

Sincerely,

Jimmie Powell
Director, Government Relations